Comment on John Smythies, "The Metaphysical Foundations of Contemporary Neuroscience: A House Built on Sand"

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In his contribution, Smythies claims that the metaphysical presuppositions that neuroscientists make are seriously out of step with what we know about the constitution of the world. He discusses (1) the three-dimensionalist world-view of neuroscientists which conflicts with the result from the special theory of relativity that the universe is a four-dimensional space-time worm; (2) the direct realist conception of perception as direct contact with worldly objects, which is contradicted by what neuroscience itself has shown, viz. that the objects of perception are the products of neural processes and thus distinct from the worldly objects causing these processes; and (3) the identity theory of the mind, which cannot be correct because neural states and mental states clearly have different properties. I will here focus on the first two of Smythies's points (though I disagree with the third as well.)

As Smythies states, special relativity treats time as a dimension more or less on a par with the three spatial dimensions. He concludes from this, first, that ordinary objects are not three-dimensional, but four-dimensional, and second, that objects don't change: They are eternal, immobile things that just have different properties at different space-time locations. This comes down to a perdurantist picture of objects, according to which they are not wholly present at any one time but have temporal parts, and, moreover, to an eternalist view of time, according to which all times are equally real, as opposed to a presentist view, on which only the ever-changing 'now' really exists.

The conflict with neuroscience has its source in the fact that it treats the brain as a three-dimensional something in which change does take place, in which events occur and can be studied by (they believe, themselves changing and moving) neuroscientists. What is really going on, according to Smythies, is that there is the four-dimensional, unchangeable block universe, including four-dimensional brain space-time worms, and additionally another type of time, the "real time t2 in which the Observer moves" and which explains why things, including brains, appear to change to human observers. If I understand him correctly, this is a distinct, but equally real time and space. At the end of the article, he says that "[w]hat we experience is phenomenal space" and suggests that "phenomenal space and physical space are ontologically and geometrically different spaces". He thinks that this is not a problem for the everyday practice of experimental neuroscience, however.

My interpretation of these claims is that Smythies holds that, in addition to the actual four-dimensional world we inhabit, there is a phenomenal world of our own creation, which has only three spatial dimensions and, as a distinct phenomenon, temporal change. So it appears that, while neuroscientists strive to learn how the actual physical brains works, their observations are sadly limited to the workings of the phenomenal brain. Smythies doesn't draw out this conclusion, but it fits with his claim that we can't point at the location of our actual brain: When we try, we instead "point […] to the head that [we] experience. This is a mistake – how can the brain be in the experienced head when the experienced head is in the brain?"

He thereby also rejects direct realism, the claim that we are immediately confronted with worldly objects in perception. He instead adheres to the representative theory. According to this view, what we perceive is what the brain *constructs* based on its conclusions, by inference to the best explanation, as to what is present in our environment. In support of this view, Smythies points out that color, shape, and movement are processed at different speeds, so that we do not see them all at the same time (which is what direct realists would have to claim). Further, he holds that since phantom limbs are possible, the body we perceive cannot be our physical body, but must be an entity constructed in the brain.

I take issue with several of Smythies's claims and arguments.

1. Space-time and the impossibility of movement and change: Here, Smythies progresses much too fast. For one, the mathematical representation of time as a dimension similar to the spatial dimensions in the special theory of relativity does not automatically commit us to the picture of the universe as a four-dimensional,

eternal, unchangeable block. The first is a mathematical model used in theoretical physics, the second a philosophical/ metaphysical claim. This is not to deny that the two claims appear to fit together quite nicely. Nonetheless, we need an argument why the claim from theoretical physics cannot be made compatible with more intuitive views of space, time and ordinary objects. This is especially true seeing as (according to Smythies) the block universe view violates many of our apparently indispensable assumptions about the world – such as that there is change or that we see ordinary worldly objects directly.

For another, even if we accept that the universe is an eternal, four-dimensional block, this by itself does not exclude the possibility of change or movement or of direct perception of things in the world. We might say that an object, e.g. someone's brain, changes whenever there is a difference between the features it has at two different points along the temporal dimension. And an object moves when it is at two different spatial locations at two consecutive times. I don't see what speaks against interpreting change and movement in these ways – it seems that this just what change and movement *are*, according to this view. It is consistent with an unproblematic way of conceiving of spatial differences as a kind of change, where we can say for instance that the German landscape changes between the North Sea and Bavaria, as it goes from flat to hilly to mountainous. If all this is correct, there is no reason to introduce a distinct phenomenal time to account for the apparent change and movements of things.

2. The untenability of direct realism: Even if there is no change or movement because of how space-time is constituted, this does not defeat direct realism. As a paradigmatic version of direct realism, take intentionalism, the view that perceptual experience, like belief, essentially represents the world as being a certain way. (Tye 1995) That is to say, it has a content, which is responsible for its phenomenal character. It is a variety of direct realism because it holds that experience *immediately* presents the subject with her surroundings, not mediated by sense-data or the like. This view accounts for illusions and hallucinations by saying that they *mis*represent the subject's environment. It could therefore easily allow that our experience of movement and temporal change is a grand illusion – experience simply misrepresents the stationary, unchanging world. The same goes for our experience of the four-dimensional world as three-dimensional. But this doesn't mean that there is an extra phenomenal space and time. Rather the situation is exactly analogous to someone's mistakenly believing that there are only the three spatial dimensions, which doesn't entail that there is an extra space and time of her belief either. For the naïve realist, what counts is that we are related to worldly objects, even if we get some of their properties wrong. For a naïve realist account of illusion, see Brewer (2008).

Alternatively, an intentionalist could insist that perceptual experience represents physical objects directly, though under a three-dimensional aspect or mode of presentation. The idea might be that we only ever represent tiny cross-sections of four-dimensional objects in experience, and that we represent the temporal dimension merely by representing, consecutively, the given features of objects (and this is just what we mistakenly conceive of as change or movement). Again, there is no need to introduce an additional three-dimensional space that involves genuine temporal change.

As to the additional problems that Smythies raises for direct realism (processing of visual stimuli and phantom limb), I don't see how they are threatening at all to the view. Everyone accepts that neural processing underlies perception – it is what is needed to establish our direct perception of our surroundings. It doesn't seem relevant that some visible features are processed more quickly than others. For the intentionalist, the way to think about this would simply be that not all features of physical objects begin to be visually represented at the same time. The naïve realist might say that the perceptual relation between the subject and the seen object is expanded over time, first including only a relation to the object and its color, but then also to its shape and finally its motion. This seems unproblematic, for it happens in other cases as well. For instance, when I look at a slowly spinning statue, I at first perceive (visually represent/am related to) only the visible features instantiated by its front, but later also to those of its sides or back.

Phantom limbs don't pose a special problem for direct realism either. They are typical examples of hallucination, and will be treated by direct realists in the normal way. Intentionalists will treat them as cases of misrepresentation, in which an object (the limb) is represented in a place where there is nothing. Naïve realists will say that, as a hallucination, it is a mental state substantially different from the indistinguishable veridical perception of the limb. (This follows from the fact that, for the naïve realist, a perception of a limb is essentially a relation to the limb, whose phenomenal character is partly constituted by the limb and its perceptible features, whereas there is no actual limb to be related to in phantom limb cases. See Martin (2009).) Unfortunately our powers of discrimination between our perceptions and some of our hallucinations are very limited, so that subjects of phantom limb experiences mistake them for perceptions of real limbs, or so the naïve realist thinks. Surely, there is more to be said about the plausibility or implausibility of either direct realist proposal; my point here is merely that the above perceptual phenomena by themselves are not very interesting obstacles. The interesting work would begin after acknowledging the intentionalist and naïve realist accounts of these phenomena, by showing that they are somehow inadequate.

3. The defensibility of an extra phenomenal space and time: If Smythies is right that we only experience the phenomenal space and time that our brain constructs, there is indeed a *practical* problem for experimental neuroscience. This is not that neuroscientists use three-dimensional terminology to investigate a four-dimensional world, but rather that the experiments that neuroscientists conduce are aimed at understanding the functioning of the actual physical brain whose processing gives rise to our mental lives. But on Smythies's account, it is not clear how they are in any position at all to learn or even to talk about the brain that does this, when their experiments are allegedly limited to merely manipulating the three-dimensional world constructed by the brain. This is at the very least a practical problem. For neuroscientists would need some additional philosophical principle allowing them to draw conclusions from what they find out by experiments about their mental constructs (the brain in the brain, so to speak) to what is going on in the actual brain.

But these considerations bring out a more principled problem for Smythies's representative realism. The basic worry goes back to Berkeley (2008, 89/90). He argues that once we accept that all we are ever confronted with are ideas (or brain-made constructs), our knowledge of the physical objects that allegedly produce them is forfeit. In Berkeley's argument, the point is that there is no deductive route from ideas to material objects, but also no inductive reasoning that would support claims about the make-up of the world beyond our experience, starting from our ideas.

To apply the Berkeleian point to Smythies's view: How could theorists' research that, due to what perception is limited to, takes as its evidence only entities existing in the three-dimensional phenomenal space, give us any definite results about the physical, four-dimensional world? Again, we need some principles that tell us how to bridge the gap between our phenomenal world and the physical world. These principles would need to be justified somehow. In light of this, one might worry how theoretical physicists can establish anything about the four-dimensional constitution of the physical world in the first place. I assume that physicists take themselves to theorize not about constructs created by their own brains, but about the actual physical world. If they've never succeeded in doing so in the first place, there might be hope that the problem that Smythies points to doesn't arise at all. So there is no need to introduce a distinction between a physical, four-dimensional space and a phenomenal three-dimensional space either.

References

Bill Brewer (2008). "How to Account for Illusion", in Adrian Haddock and Fiona Macpherson (eds.), *Disjunctivism: Perception, Action, Knowledge.* Oxford: Oxford University Press, 168-180.

Mike Martin (2009), "The Reality of Experiences", Alex Byrne and Heather Logue (eds.), *Disjunctivism: Contemporary Readings:* Cambridge, MA: MIT Press, 91-116.

Michael Tye (1995). *Ten Problems of Consciousness*. Cambridge, MA: MIT Press.